

관계 대수를 이용한 페트리 네트의 모델링 Petri Nets Modeling Using Relational Algebra

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Abstract

This paper proposes an analysis method of Petri nets (PNs) using the relational algebra (RA). More specifically, we represent PNs in relations of the relational model. Based on such representation, we first develop an algorithms for analyzing properties of PNs, such as boundedness, conservation, coverability, reachability, and liveness.

The advantage of this approach is as follows: First, the algorithms represented by RA can be easily converted to a query language such as SQL of the widely used, commercial relational database management systems (DBMSs). Second, we can alleviate the problem of state space explosion because relational DBMSs can handle large amounts of data efficiency. Finally, we can use the DBMS's query language to interpret the Petri nets and make simulation.

Key Words : relational algebra, petri net